

2.3 INDUSTRIAL WASTEWATER PRETREATMENT SYSTEM DESCRIPTION

Approximately 2 million gallons per day (gpd) of process wastewater is pumped from the mill to the IWPS for processing. The treatment method is primary clarification followed by secondary biological activated sludge treatment. Approximately 63% of the flow is returned to the mill for reuse in the showers following treatment by primary clarification only. Approximately 22% is returned to the mill following secondary treatment. Approximately 15% of the water sent to the IWPS is eventually discharged to the municipal sewer. The components of the IWPS are briefly described in the following subsections.

2.3.1 Surge Tank

Process wastewater from the mill is discharged to the Surge Tank by the mill Filtrate Pumps. This wastewater originates as excess filtrate from the stock prep thickening process. Filtrate from the Gravity Table in the sludge processing area is also added to this tank. A cationic coagulant is also added to improve clarification. Water is pumped from the Surge Tank to the Primary Clarifier by a variable speed pump. The rate of pumping is controlled by the level in the Clarifier Effluent Tank.

2.3.2 Primary Clarifier

The Primary Clarifier is an 80-foot diameter, Eimco clarifier for removal of bulk solids prior to reuse in the mill or further treatment. Water is fed to the Primary Clarifier from the Surge Tank. Clarified water is discharged to the Clarifier Effluent Tank. Sludge and Scum are discharged to the Blend Tanks for Sludge Processing.

2.3.3 Clarifier Effluent Tank

The primary clarified water is discharged by gravity to the Clarifier Effluent Tank. Water can be pumped from this tank back into the mill for reuse in the mill showers, to the shower water tank for reuse in the sludge processing showers, or to the SBRs for further treatment. The amount sent to each is based on demand and is controlled by automated valves.

2.3.4 PWPP Shower Tank

The PWPP shower tank receives water from the Clarifier Effluent Tank and feeds the showers on the gravity table and belt filter press in the sludge dewatering process.

2.3.5 Blend Tank

The Blend Tank receives sludge from the primary clarifier and the SBRs. It also receives floating scum from the primary clarifier, water from the building sump pumps in the PWPP, and pressate returned from the sludge belt press. It mixes these components and is pumped to the sludge processing components.

2.3.6 Sludge Processing

Sludge processing consists of two stages of thickening. The first is a gravity table thickener followed by a belt press thickener. Through these two processes sludge is dewatered to 35–40% solids. Sludge is sent off site for reuse in the production of compost materials. Filtrate from the gravity table is returned to the Surge Tank and pressate from the Belt Press is returned to the Blend Tank. Hydrogen peroxide (50% concentration) is added to the filtrate and pressate to control odors.

2.3.7 Sequencing Batch Reactors

The SBRs are fed from the clarifier effluent tank by the clarifier effluent pumps. There are two Aqua Aerobics SBRs each with a 1.8 million gallon volume. The SBRs are an aerobic biological treatment process that follows a set sequence of operations to treat wastewater in batches. Sufficient air is supplied to the SBRs by aeration blowers. The sequence followed is as follows:

1. Mix-Fill
 - Influent enters reactor
 - Complete mix of contents is achieved without use of aeration
2. React-Fill
 - Influent flow continues under mixed and aerated conditions
3. React
 - Influent flow is terminated
 - Mixing and aeration continue in absence of raw waste

4. Settle
 - Influent flow does not enter reactor
 - Mixing and aeration cease
5. Decant-Sludge Waste
 - Influent flow does not enter reactor
 - Mixing and aeration remain off
 - Decantable volume removed by subsurface withdrawal
 - Reactor is immediately ready to receive next batch of raw influent
 - A small amount of sludge is wasted near end of each cycle

Decant water is discharged by gravity to the Hardinge Tank. Waste activated sludge is discharged by pump to the Blend Tank for sludge processing. When one SBR is in the React, Settle, and Decant-Sludge Waste cycles the other SBR is filling. There are three operating blowers for the SBRs.

2.3.8 Hardinge Tank

Treated water from the SBRs is discharged to the Hardinge Tank. The Hardinge Tank is pumped to the Seal Water/Superclarified Water Chests. No treatment occurs in the Hardinge Tank.

2.3.9 Seal Water/Superclarified Water Chests

Treated water is pumped into the Seal Water/Superclarified Water Chests from the Hardinge Tank. In addition, fresh pond water treated by sand filtration can be added to these tanks as make-up water. Water is discharged from these tanks by two pumps. The seal water pump transfers water from the Seal Water Chest to the seal water piping system for use in seals for rotating equipment in the plant, as well as to the mill hose stations. The superclarified water pump transfers water to the mill showers or to effluent trench for discharge to the sewer and WFWWTP. Discharge to the effluent trench is controlled by an automated valve that is tied into the plant control system.

2.3.10 Effluent Trench

Treated water is discharged to the effluent trench by the automated valve on the discharge pipeline of the Superclarified Water Pump. The water is discharge in the trench behind a v-notch weir. Non-contact cooling water that originates from process cooling operations can also be discharged

to the trench at this location. The water elevation on the weir is continuously measured and discharge flow is calculated according to the formula for the weir. Composite or grab samples are collected automatically by an automated sampler from the trench. Continuous pH and temperature measurements are collected at this point and recorded.